New Alternatives Considered for V-tanks at Waste Area Group 1

WASTE AREA GROUP 1

Waste Area Group -- one of the 10 administrative management areas established under the INEEL Federal Facility Agreement and Consent Order (FFA/CO). The Test Area North is designated as Waste Area Group 1.

Federal Facility Agreement and Consent Order -- an agreement among the DOE, the EPA, and the state of Idaho to evaluate potentially contaminated sites at the INEEL, determine if remediation is warranted, and select and perform remediation, if necessary.

Record of Decision -- a public document that identifies the selected remedy at a site, outlines the process used to reach a decision on the remedy, and confirms that the decision complies with CERCLA.

Proposed Plan – document requesting public input on a proposed remedial alternative (cleanup plan).

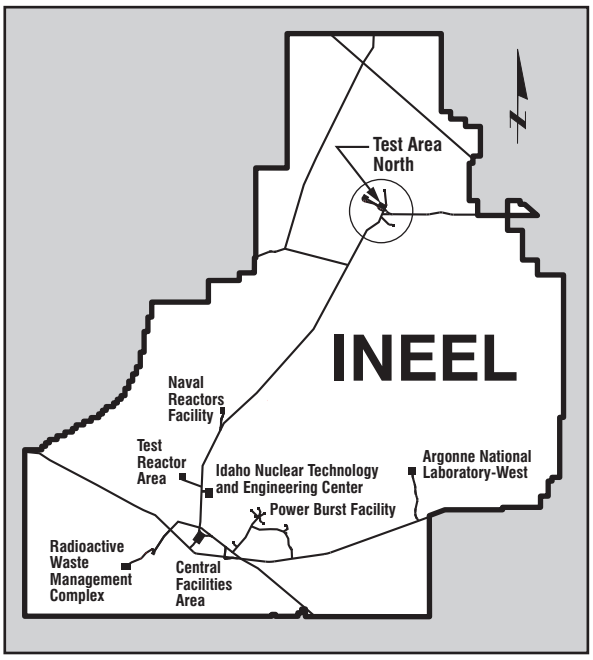
Operable Unit -- an area or areas with distinct characteristics or similar wastes grouped for management efficiency.

Introduction

The U.S. Department of Energy, U.S. Environmental Protection Agency, and state of Idaho are considering new alternatives for remediating the V-tanks at the Idaho National Engineering and Environmental Laboratory's Test Area North. Test Area North is designated as **Waste Area Group 1** (WAG 1) under the ***INEEL Federal Facility Agreement and Consent Order***.

The agencies signed a **Record of Decision** for Waste Area Group 1 in December 1999, but assumptions regarding the disposal of the V-tanks and their contents changed, resulting in the need to amend the Record of Decision.

This is your first opportunity to provide input into the process. Please use the enclosed form to provide your thoughts to the agencies.



V-tanks are located at the Test Area North facility.

What is the V-tanks site?

The V-tanks site consists of four underground storage tanks, associated piping, related structures, and surrounding contaminated soil. There are three out-of-service 10,000-gallon underground storage tanks (V-1, -2, and -3) approximately 10 feet below the ground surface, piping, the tank contents and the surrounding soil. There is also an out-of-service 400-gallon underground storage tank (V-9) approximately 7 feet below the ground surface, the tank contents, a sand filter, piping and the surrounding soil.

The tanks were installed in the early 1950s as part of a system designed to collect and treat radioactive effluents from Test Area North. The soil at the site was contaminated primarily with cesium-137 as a result of spills when waste was transferred to and from the tanks. The tank contents are contaminated with radionuclides, heavy metals and organic compounds, including polychlorinated biphenyls (PCBs).

Characteristics of the V-tank contents

Mercury: > 2,000 ppm in V-9 sludge

Trichloroethylene: up to 2 % in sludge

PCBs: High of 660 ppm; average 300 ppm in sludge

Cesium-137: total activity >57 curies in sludge and <1 curie in liquid

Strontium-90: Total activity >103 curies in sludge and <1 curie in liquid

Radiation levels: up to 8 REM on contact for dewatered sludge

Plutonium and uranium isotopes: fissile material totals 486 grams

Transuranic (TRU) isotopes: up to 70 nCi/g in sludge

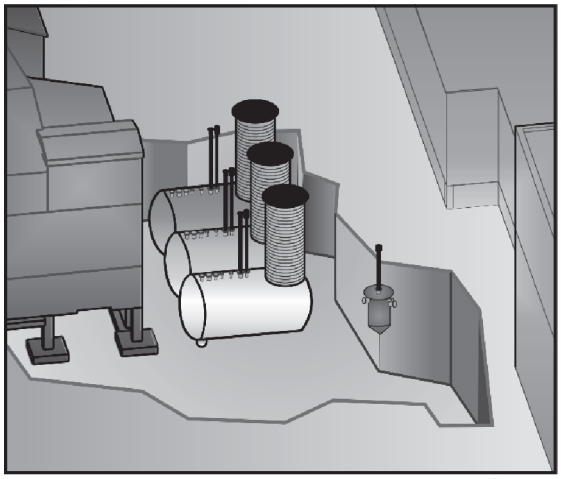
Sludge and liquid: classified as listed hazardous waste

Total liquid content of the tank: about 9,958 gallons

Total sludge content of the tank: about 1,942 gallons.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) The federal law that establishes a program to identify, evaluate, and remediate sites where hazardous substances may have been released (leaked, spilled or dumped) into the environment

Why is it necessary to consider new remedies for the V-tanks?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V-tanks underground configuration.

The remedy selected for the V-tanks in the Operable Unit 1-10 Record of Decision cannot be implemented because there are no out-of-state treatment facilities capable of treating the V-tank waste. The selected remedy was "Soil and Tank Removal, Ex-Situ Treatment of Tank Contents, and Disposal." The remedy included removing and shipping of the tank contents to an out-of-state treatment facility. The treated tank contents, the contaminated soils, and the tanks were to be disposed of at the INEEL CERCLA Waste Disposal Facility (ICDF) or other acceptable facility. The ICDF is an agency-approved disposal site that has a liner and monitoring system.

Two commercial out-of-state treatment facilities were identified during the development of the Record of Decision. The treatment facilities are no longer available and there are no new out-of-state treatment facilities capable of directly treating the V-tanks contents; therefore, the agencies have decided to consider other alternatives.

How will DOE, EPA and the state of Idaho choose a new remedy?

The agencies have agreed to make a fundamental change to the Operable Unit 1-10 Record of Decision. The process includes evaluating several remedies, some previously considered and some entirely new. These potential remedies will be evaluated with respect to the nine criteria set forth in **Comprehensive Environmental Response, Compensation, and Liability Act** (CERCLA) for remedy selection. A proposed plan will be issued and public comments will be taken. The agencies will consider public comments received on the proposed plan, and then will issue an amendment to the Operable Unit 1-10 Record of Decision. The INEEL will implement the selected remedy.

What alternatives are being considered?

Five alternatives, utilizing four primary treatment technologies, are being considered for remediation of the V-tanks. The treatment technologies recommended by the Advanced Mixed Waste Treatment Facility Blue Ribbon Panel for similar wastes were considered and those applicable to the V-tank wastes were retained for analysis. Other technologies applicable to the V-tank waste also were considered. Table 2 summarizes the features of each alternative, the locations of treatment and disposal, and some of the issues or limitations. The thermal desorption alternative also includes variations with respect to on- INEEL and out-of-state secondary treatment/disposal options. All alternatives include the following features:

Treatment and on-INEEL disposal (i.e., ICDF) of a portion of the tank liquid prior to treatment of remaining liquid and sludge. Excavation and disposal of contaminated soil at the ICDF.

A temporary, portable treatment unit at the V-tank location during one summer season.

Treatment to meet Land Disposal Restrictions for the tank contents. Removal of the tanks and related equipment, tank contents (before or after treatment), and contaminated soils, thus removing the source of risk created by the tank contents and soils.

Will any of the alternatives leave waste in place?

No. Even for in-situ treatment alternatives, the final waste form will be removed from the ground and disposed of at the ICDF, as required by the Record of Decision.

What do the treatment technologies accomplish?

Vitrification	Destroys organic compounds, including polychlorinated biphenyls. Immobilizes radionuclides and heavy metals in glass. Captures semi-volatile compounds in the off-gas system, then recycles or treats secondary wastes.
Thermal Desorption	Separates organics and mercury from radioactive sludge, allowing on-INEEL or out-of-state treatment of these contaminants to meet Land Disposal Restrictions.
Chemical Oxidation	Destroys organics and polychlorinated biphenyls as a pre-treatment step to eventual stabilization of the waste.
Stabilization	Immobilizes contaminants in solid form.

Public Involvement

The agencies want to ensure the public is informed of the impending change to the selected remedy. You are encouraged to provide input on the alternatives being considered at this early stage or later during the formal proposed plan process.

Use the attached postage-paid form to provide comments to the agencies. To arrange a briefing, call the INEEL Community Relations Office at (208) 526-4700 or the INEEL's toll-free number at (800) 708-7680.

The previously selected remedy for the V-tanks included out-of-state thermal treatment of the tank contents. The alternatives now being considered all involve some amount of treatment at the V-tanks site, either in-situ or ex-situ. Both thermal and nonthermal treatment technologies are under consideration. As with the previously selected remedy, the final disposal site for the treated V-tank waste is generally anticipated to be the INEEL CERCLA Disposal Facility. The treated V-tank waste will not go to ICDF unless the waste acceptance criteria for the ICDF can be met.

What are your thoughts about the V-tank waste being treated on-site instead of off-site? What treatment alternative is most preferable to you?

Additional Information

Detailed information is available in the **Administrative Record** file for Operable Unit 1-10. The Administrative Record is located at the DOE Reading Room of the INEEL Technical Library, 1776 Science Center Drive, Idaho Falls. Copies can be found at Albertsons Library on the Boise State University campus and the University of Idaho Library in Moscow. The Administrative Record can be accessed on the Internet at http://ar.inel.gov/home.html

Administrative Record – documents including correspondence, public comments, Records of Decision, and technical reports upon which the agencies base their remedial action selection.

Project Schedule

- Technical Evaluation Complete -- November 2002
- Proposed Plan Comment Period -- April 2003
- Record of Decision Signed – Winter 2003/2004

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Alternatives Being Considered for V-tank Cleanup

Alternative	Waste Streams	Primary Treatment (Options shown)	Primary Treatment Location	Secondary Treatment	Secondary Treatment Location	Disposal Location	Potential Issues
In-Situ Vitrification (ISV) (Tank contents may be consolidated into one or more tanks prior to vitrification.)	Tank liquid and sludge	In-Situ Vitrification	On-site in tanks	None	N/A	ICDF*	Safety issues with past demonstrations must be eliminated.
	ISV Off-gas condensate (liquid)	Filtration	On INEEL	Stabilization	On INEEL	ICDF	
	ISV Off-gas solids	Filtration	On INEEL	Stabilization	On INEEL	ICDF	
	Soil	None	N/A	None	N/A	ICDF	
	Tanks	In-situ vitrification	On INEEL	None	N/A	ICDF	
Ex-Situ Vitrification (ESV)	Tank liquid and sludge (+ portion of soil)	Ex-Situ Vitrification	On-site, above ground in portable system	None	N/A	ICDF	Vitrified glass must be <10 nCi/g transuranic waste to go to ICDF, otherwise disposal must be out of state. Potential safety concerns.
	ESV Off-gas condensate	Filtration	V-tank location	Stabilization	On INEEL	ICDF	
	ESV Off-gas solids	Filtration	V-tank location	Stabilization	On INEEL	ICDF	
	Soil	None	N/A	None	N/A	ICDF	
	Tanks	Stabilization	V-tank location	None	N/A	ICDF	
Ex-Situ Thermal Desorption (TD) and Stabilization	Tank liquid and sludge	Thermal desorption	V-tank location	Stabilization of sludge residues	On INEEL	ICDF or out-of-state	Multiple treatment processes required. If radionuclides are released to off-gas system, off-site treatment of off-gas residuals is more difficult. If treated residue is >10 nCi/g transuranic waste, then disposal at ICDF is not possible and off-site disposal (Nevada Test Site or Hanford) will be pursued. Remote operation of thermal desorption unit in radiological environment not previously demonstrated.
	Treatment off-gas water condensate	Thermal or Non-thermal	Out-of-state	N/A	N/A	Out-of-state	
		Thermal or Non-thermal	On INEEL	Stabilization	On-site	ICDF	
	Treatment off-gas mercury	Amalgamation	Out-of-state	N/A	N/A	Out-of-state	
		Amalgamation	On INEEL	N/A	N/A	ICDF	
	Soil	None	N/A	None	N/A	ICDF	
	Tanks	Stabilization	V-Tank location	None	N/A	ICDF	
Ex-Situ Chemical Oxidation and Grouting	Tank liquid and sludge	Chemical Oxidation	V-Tank location--ex-situ, in portable chemical oxidation system	Stabilization of combined chemical oxidation residues and liquids	On INEEL	ICDF	Multiple treatment processes. May require variance from standard mercury/ treatment technology. Organic destruction efficiency may not be sufficient.
		None	N/A				
	Chemical oxidation off-gas condensate	None	N/A	Stabilization of combined chemical oxidation residues and liquids	On INEEL	ICDF	
	Soil	None	N/A	None	N/A	ICDF	
	Tanks	Stabilization	V-Tank location	None	N/A	ICDF	
In-Situ Chemical Oxidation and Grouting (Tank contents may be consolidated into one or more tanks prior to treament.)	Tank liquid and sludge	Chemical Oxidation	V-Tank location – in-situ, before removal from V-Tanks	Stabilization of combined chemical oxidation residues and liquids	On INEEL	ICDF	Multiple treatment processes. May require variance from standard mercury/ treatment technology. Organic destruction efficiency may not be sufficient.
		None	N/A				
	Chemical oxidation off-gas condensate	None	N/A	Stabilization of combined residues and liquids	On INEEL	ICDF	
	Soil	None	N/A	None	N/A	ICDF	
	Tanks	Stabilization	V-Tank location	None	N/A	ICDF	

* INEEL CERCLA Disposal Facility

I would like to provide input on the new alternatives under consideration for the V-tanks at Test Area North.

Comments:

(Continued on next page)

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Continued:

Please submit your ideas and suggestions. You may wish to use this form to submit comments by folding, taping, and returning it via business reply mail. No postage is necessary. (Add additional pages if necessary.)

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